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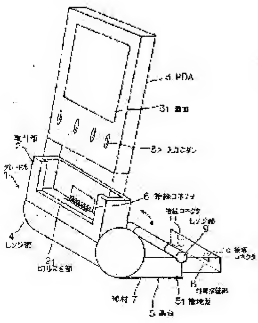
(54) CRADLE FOR MOBILE INFORMATION TERMINAL



(57)Abstract:

PROBLEM TO BE SOLVED: To provide a cradle for a mobile information terminal that can flexibly be placed on a desktop, have enhanced portability, prevent a connection connector from being damaged, and realize a long time operation.

SOLUTION: Since a mount 2 and a base 5 of a personal digital assistant (PDA) 3 are connected via a hinge 4 in the cradle 1, the tilt angle of the PDA 3 can freely be adjustable and foldable. The base 5 can be folded into a member 7 and an external connection section 8 via a hinge 9. The external connection section 8 can be contained in the mount 2 and acts like a protection member for protecting the connector 6 when being contained. The hinge 4 has a containing space to contain a power supply for supplying power to the PDA 3 via the connector 6.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention about the mounting base for laying a Personal Digital Assistant (PDA), In order to output and input data exchange with the information processor of the exteriors, such as supply of the electric power to the Personal Digital Assistant laid especially, or a personal computer, and the signal for a synchronization, it is related with the mounting base of a Personal Digital Assistant provided with the connection connector for electrically connecting with a Personal Digital Assistant.
[0002]
[Description of the Prior Art]These days, PDA (personal digital reed SUTANTSU) which is a Personal Digital Assistant is designed very small.
It can use now also in movement.
However, when it returns to a house, an administration building, etc. and puts on a desk although PDA is small therefore, it is inferior to stability, operativity, etc. Then, the plinth type cradle for PDA is used as a mounting base which lays PDA. By laying PDA on the cradle for PDA, paper stability can lay the screen of increase and PDA in a legible angle.
[0003]Only by carrying PDA on the cradle for PDA, via a serial cable, it is connectable with other information processors (PC), for example, a personal computer, and data exchange can be performed between PDA and PC, or a synchronization can be taken for PDA. From this convenience, the cradle for PDA has spread widely and much PDA is connected to PC via this cradle for PDA.
[0004]Drawing 4 is a perspective view showing the appearance of the conventional cradle for PDA. As shown in drawing 4, the cradle 101 which is the conventional cradle for PDA is provided with the serial cable 102 for connecting with PC etc., and the mounting surface 104 for laying PDA3. The mounting surface 104 inclines only the predetermined angle to the sidewall of the cradle 101. The connection connector 6 for electrically connecting with PDA3 is formed in the lower part of the mounting surface 104. The connection connector 6 is connected with the serial cable 102.
Supply of the electric power from the outside or data exchange with an external information processor, and input and output of the signal for a synchronization are performed via the connection connector 6.

[0005]As a place where the cradle 101 is used, As mentioned above, since the desk top with which PC of a house or an office is installed is assumed, the shape of the cradle 101 is shape like a plinth, and the cradle 101 is designed quite more greatly than PDA3, in order to be stabilized and to support PDA3. Therefore, there was a problem that the conventional cradle 101 did not necessarily fit a cellular phone. In the cradle 101, the mounting surface 104 was immobilization, and since the installation angle of PDA3 had

been fixed, there was a problem that the installed position on the desk of the cradle 101 that the screen of PDA3 becomes legible will be limited. Since the connection connector 6 of the cradle 101 and PDA3 will be in a state unreserved on the outside when dissociating from PDA3 and carrying the cradle 101, there was a problem that the connection connector 6 might be damaged by the shock under movement.

[0006]On the other hand, it is common to operate with the electric power which PDA3 equips the inside with the battery (un-illustrating), and is supplied from this battery during going out. This battery is used also as a supply source of the electric power for memorizing data.

The data remembered that a battery is discharged thoroughly will disappear.

These days, although PDA3 may be used for uses, such as a train at the time of going out, and appreciation of the animation in an airplane, the thing over a long time also has display time in these animations, and much electric power is needed. Although it was desirable that it is large scale as much as possible as for the battery built in by PDA3 from the above thing, since the mass battery was generally large-sized, there was a problem of being the hindrance of a miniaturization of PDA3.

[0007]

[Problem(s) to be Solved by the Invention]As stated above, the conventional PDA and its cradle have a problem shown below.

(1) In a cradle, since the angle of gradient of PDA is fixed, the installed position on the desk that a screen becomes legible will be limited.

(2) The cradle serves as shape like a plinth, and since it is designed more greatly than PDA, it does not fit a cellular phone.

(3) In a cradle, since a connection connector is conveyed in the state unreserved on the outside, a connection connector may be damaged by a shock.

(4) Although it is desirable to have a mass battery for maintenance of stored data and prolonged animation display, since the mass battery is generally large-sized, it will be the hindrance of a miniaturization of PDA.

[0008]An object of this invention is to provide the product table of a Personal Digital Assistant which enables prolonged operation without enabling flexible installation, improving portability, preventing breakage of the connection connector under portable conveyance, and enlarging a Personal Digital Assistant.

[0009]

[Means for Solving the Problem]In a mounting base for this invention to lay a Personal Digital Assistant in order to solve an aforementioned problem, It has a fitting part which attaches said Personal Digital Assistant, a pedestal in which sidewall was formed, and a hinge region which enables setting out of an angle of gradient of said Personal Digital Assistant to said sidewall arbitrarily, and connects so that folding of said pedestal and said fitting part is possible.

[0010]By having a hinge region which connects a pedestal in which sidewall was formed, and a fitting part which attaches a Personal Digital Assistant in a mounting base of a Personal Digital Assistant of this invention, and enabling setting out of an angle of gradient of a Personal Digital Assistant arbitrarily, Since an installed position on a desk of a Personal Digital Assistant that a screen becomes legible is no longer limited, flexible installation of a Personal Digital Assistant is attained.

[0011]In a mounting base of a Personal Digital Assistant of this invention, since they can be folded up and it can miniaturize by making folding of a pedestal and a fitting part possible, portability can be improved.
[0012]In a mounting base of other Personal Digital Assistants of this invention, said fitting part, Have a connection connector for electrically connecting with said Personal Digital Assistant, in order to perform supply of electric power to said Personal Digital Assistant, or input and output of a signal, and further said pedestal, It has the 1st member by which one end was connected to said hinge region, the 2nd hinge region connected to the other end of this 1st member, and the 2nd member that will be stored by said fitting part if it folds up via said 2nd hinge region when it is connected to this 2nd hinge region and said pedestal and said fitting part are folded up.
[0013]In a mounting base of a Personal Digital Assistant of this invention, since the 2nd member that is said a part of pedestal can store to a fitting part and it can miniaturize further, portability increases further. In this mounting base, from a field of a miniaturization, as for said fitting part, it is desirable to have a notch section for passing said 2nd member, when said 2nd member is folded up, and said notch section, It is more desirable to be provided in the state where said Personal Digital Assistant is attached, so that a button for an input of said Personal Digital Assistant may be outside exposed.
[0014]In a mounting base of other Personal Digital Assistants of this invention, said 2nd member turns into a protect member which protects said connection connector, when stored by said fitting part.
[0015]In a mounting base of other Personal Digital Assistants of this invention, said 2nd member is provided with a connection connector with an external information processor, or a connection connector for current supply to said Personal Digital Assistant, and said fitting part serves as a protect member which protects those connection connectors, when said 2nd member is stored.
[0016]In a mounting base of a Personal Digital Assistant of this invention, when a pedestal and a fitting part are folded up, it becomes a protect member for the 2nd member and fitting part that are a part of pedestals to protect each connection connector. Since each connection connector can be protected by the 2nd member and fitting part by carrying out like this, breakage of each connection connector under portable conveyance can be prevented.
[0017]In a mounting base of other Personal Digital Assistants of this invention, said 2nd member is in a state which attached said Personal Digital Assistant to said fitting part, and folded up said pedestal via said 1st hinge region, and supports the back of said Personal Digital Assistant. If it does in this way, mounting strength when carrying with a Personal Digital Assistant attached can be raised.
[0018]In a mounting base of other Personal Digital Assistants of this invention, said hinge region can store a power supply which supplies electric power via said connection connector.
[0019]In a mounting base of a Personal Digital Assistant of this invention, a power supply for supplying electric power to a Personal Digital Assistant can be carried in a hinge region. Operation of a long time of a Personal Digital Assistant is attained without enlarging a Personal Digital Assistant, since capacity of a power supply supplied to a Personal Digital Assistant can be increased without increasing capacity of a battery of a Personal Digital Assistant if it does in this way. A power supply stored by hinge region

may be used as a backup power supply of a battery built in a Personal Digital Assistant, and may be used as a power supply for charging the battery. As for the power supply, it is desirable that it is a cell of marketing with easy receiving by a place where one has gone. If it does in this way, a user can perform a changing battery easily also a place where one has gone. If it is considered as a cell of marketing of a power supply, and an isomorphous exclusive battery charger, an economical merit will be obtained [rather than] using a dry cell [that it cannot charge] etc.

[0020]

[Embodiment of the Invention]Next, the mounting base of the Personal Digital Assistant of one embodiment of this invention is explained in detail with reference to drawings. Drawing 1 is a perspective view showing the appearance of the mounting base of the Personal Digital Assistant of this embodiment. As shown in drawing 1, the cradle 1 which is a mounting base of the Personal Digital Assistant of this embodiment is provided with the fitting part 2, the hinge region 4, and the pedestal 5. Attachment of PDA3 of the fitting part 2 is attained, and like the conventional cradle 101 shown in drawing 3, in order to output and input the signal for supply of the electric power of PDA3 or data exchange, or a synchronization, it is provided with the connection connector 6 for electrically connecting with PDA3. When PDA3 is attached, the fitting part 2 has notch section 2_1 so that input button 3_2 may be outside exposed.

[0021]The hinge region 4 is formed between the pedestal 5 and the fitting part 2 in which the sidewall grounded to desk superiors is formed. The hinge region 4 is connected so that folding of the pedestal 5 and the fitting part 2 is possible. The hinge region 4 enables setting out of the angle of gradient of the fitting part 2 to the sidewall of the pedestal 5, i.e., the angle of gradient of PDA3, arbitrarily. In the cradle 1, since the installed position on the desk of PDA3 with which screen 3_1 of PDA3 becomes legible by having the hinge region 4 and enabling setting out of the angle of PDA3 arbitrarily is no longer limited, installation of flexible PDA3 is attained. Since folding is possible and it can miniaturize by the pedestal 5 and the fitting part 2, the cradle 1 can improve portability.

[0022]The member 7 whose fitting part 5 is the 1st member by which the end was connected to the hinge region 4, It comprises the hinge region 9 which is the 2nd hinge region connected to the other end of the member 7, and the external connection part 8 which is the 2nd member that protects the connection connector 6 when it is connected to the hinge region 9, the pedestal 5 and the fitting part 2 are folded up and it is folded up via the hinge region 9. The external connection part 8 possesses the connector 10 for connection for performing other external information processor, data exchange, and synchronous processing, such as a personal computer, and the connection connector 11 for the current supply to a Personal Digital Assistant.

[0023]Drawing 2 is orthogonal views showing the structure of the mounting base of the Personal Digital Assistant of this embodiment. Drawing 2 (a) is a front view of the mounting base of the Personal Digital Assistant of this embodiment, drawing 2 (b) is a side view of the mounting base, and drawing 2 (c) is a rear elevation of the mounting base. Drawing 2 (a) In - (c), it is in the state where PDA3 was attached to the fitting part 7, and is in the state where the cradle 1 was folded up via the hinge region 4. When carrying laying PDA3 in the cradle 1, changing the cradle 1 into a state like drawing 2 (a) - (c) sees from a portable field, and it is desirable. In this state, since the connection connector 6 has become [being connected with as PDA3, and], if PDA3 is certainly

attached to the fitting part 2, the connection connector 6 will not damage it. Therefore, the external connection part 8 is supporting the back of PDA3 in this state, and the mounting state of PDA3 is strengthened. It is desirable to establish the locking mechanism (un-illustrating) for fixing PDA3 to the fitting part 2, etc. The synchronous button 11 is a button for synchronizing PDA3 and PC connected with PDA3 via a serial cable (un-illustrating).

[0024]Drawing 3 is a side view of the mounting base of the Personal Digital Assistant of this embodiment. Drawing 3 (a) is a side view showing the shape of the cradle 1 when the cradle 1 is laid in PDA3 and it installs on a desk. In drawing 3 (a), both the member 7 and the external connection part 8 form sidewall 5_1 as the pedestal 5, and are supporting PDA3. As for the angle of gradient theta of PDA3, in all the angles of gradient theta which can set up the pedestal 5 which added the member 7 and the external connection part 8 since it was able to set up, it is required as mentioned above arbitrarily that it should have sufficient length that PDA3 does not fall. The locking mechanism (un-illustrating) for preventing the pedestal 5 from bending focusing on the hinge region 9 with the weight of PDA3, etc. may be provided in the pedestal 5 in the state which shows in drawing 3 (a). This locking mechanism has an easily desirable thing in which engagement release is [that engagement is possible and] possible by a user's handicraft.

[0025]Next, the case where remove PDA3 and the cradle 1 is carried is explained. Drawing 3 (b) is a side view of the cradle 1 in the state where removed PDA3 and it was folded up via the hinge region 4. The state of the cradle 1 shown in drawing 3 (b) is the same as that of drawing 2 (a) - (c). it is shown in drawing 3 (b) -- as -- the cradle 1 -- the length of the fitting part 2, and the length of the hinge region 9 -- abbreviated -- when it is the same and is folded up via the hinge region 4, the hinge region 9 touches the upper bed of the fitting part 2.

[0026]Drawing 3 (c) is a side view showing the cradle 1 in the state where it was folded up thoroughly. In the state which shows in drawing 3 (c), the external connection part 8 is folded up via the hinge region 9, and is stored by the portion which attaches the cradle 1 in the fitting part 2. In the cradle 1, by folding up the external connection part 8 and storing to the fitting part 2, the cradle 1 can be miniaturized further and portability can be improved. In the cradle 1, the external connection part 8 serves as a protect member for protecting the connection connector 6, and the fitting part 2 serves as a protect member for protecting the connection connectors 10 and 11 allocated in the external connection part 8 conversely. Since the connection connector 6 can be protected by the external connection part 8 and the connection connectors 10 and 11 can be protected by the fitting part 2 by carrying out like this, breakage of the connection connectors 6, 10, and 11 under portable conveyance can be prevented. As mentioned above, in order to store the external connection part 8 to the fitting part 2, it is required that the size of the external connection part 8 should be a size of the grade which can pass notch section 2_1.

[0027]As shown in drawing 3 (c), in the cradle 1, the hinge region 4 has the storage space for storing the cell 10 which is a power supply which supplies electric power via the connection connector 6. Prolonged operation of PDA3 is attained without enlarging PDA3, since the capacity of the whole power supply supplied to PDA3 can be increased without increasing the capacity of the battery built in the above-mentioned PDA3 if it does in this way. Therefore, in the cradle 1, since the animation display over maintenance of the stored data over a long time and the long time in a place where one has gone is

attained making PDA3 small, a user can be provided with a comfortable operating environment.

[0028]The cell 10 stored by the hinge region 4 may be used as a backup power supply of the battery built in PDA3, and may be used as a cell for charging the battery. As for the cell 10, it is desirable to make usable the cell which can be charged [that it is of the same shape as the cell of marketing with easy receiving by a place where one has gone or a commercial cell and], i.e., consider it as the storage space for the cells of marketing of the storage space of the hinge region 4. As long as it is a cell (for example, a dry cell and the battery cell which can be charged) which a user tends to obtain as a commercial cell, what kind of thing may be used. If it does in this way, even if the stored cell is exhausted by a place where one has gone, a user can replace cells easily. Though it is of the same shape as a dry cell, charge by supply of an external power is also attained by using a cell for exclusive use. It cannot be overemphasized that it is necessary to equip the storage space which stores the cell 10 with the electrode electrically connected to the connection connector 6.

[0029]Although PDA3 attached to the cradle 1 presupposed that it is what is provided with four input button 3_2 with approximately rectangular parallelepiped shape in drawing 1 - drawing 3 in the mounting base of the Personal Digital Assistant of this embodiment, This invention is not limited to this and can be applied to PDA of various shape and specification. The shape of the shape of the fitting part 2 in the cradle 1, the shape of the connection connector 6, an arrangement place and the length of a pedestal, notch section 2_1, and the external connection part 8 should be designed suit shape and specification at PDA to apply.

[0030]

[Effect of the Invention]As stated above, the mounting base of the Personal Digital Assistant of this invention has an effect taken below.

(1) By having a hinge region which connects a pedestal with sidewall, and the fitting part which attaches a Personal Digital Assistant, and enabling setting out of the angle of gradient of a Personal Digital Assistant arbitrarily, Since the installed position on the desk of the Personal Digital Assistant which becomes legible about a screen is no longer limited, flexible installation of a Personal Digital Assistant is attained.

(2) Since they can be folded up and it can miniaturize by making it foldable [a pedestal and a fitting part], portability can be improved.

(3) Since a pedestal and a fitting part can be folded up and a part of pedestal can be further stored to a fitting part, it can miniaturize further and portability can be improved.

(4) Since a connection connector can be protected as a protect member for a part of pedestal to protect a connection connector when a pedestal and a fitting part are able to be folded up, breakage of the connection connector under portable conveyance can be prevented.

(5) Since the capacity of the power supply supplied to a Personal Digital Assistant can be increased without increasing the capacity of the battery of a Personal Digital Assistant by carrying the power supply for supplying electric power to a Personal Digital Assistant in a hinge region, Operation of the long time of a Personal Digital Assistant is attained without enlarging a Personal Digital Assistant.

(6) Since it is considered as the cell of marketing of a power supply, a user can perform a changing battery easily also a place where one has gone. When using the battery charger

which can be charged as a power supply, an economical merit is obtained [rather than] using a dry cell [that it cannot charge] etc.

CLAIMS

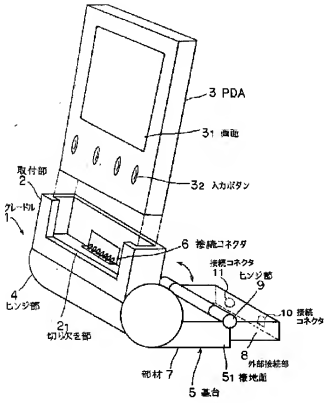
[Claim(s)]
[Claim 1]A mounting base of a Personal Digital Assistant characterized by comprising the following.
A fitting part which attaches said Personal Digital Assistant in a mounting base for laying a Personal Digital Assistant.
A pedestal in which sidewall was formed.
A hinge region which enables setting out of an angle of gradient of said Personal Digital Assistant to said sidewall arbitrarily, and connects so that folding of said pedestal and said fitting part is possible.

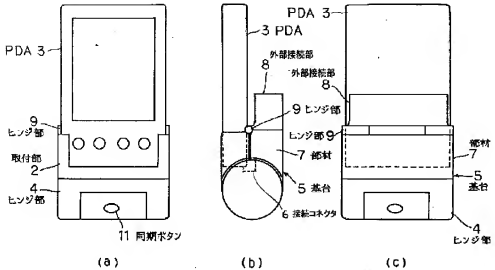
[Claim 2]A mounting base of the Personal Digital Assistant according to claim 1 provided with a connection connector for electrically connecting with said Personal Digital Assistant, in order that said fitting part may perform supply of electric power to said Personal Digital Assistant, or input and output of a signal.
[Claim 3]A mounting base of the Personal Digital Assistant according to claim 1 or 2 characterized by comprising the following.
The 1st member by which an end was connected to said hinge region as for said pedestal.
The 2nd hinge region connected to the other end of this 1st member.
The 2nd member that will be stored by said fitting part if it folds up via said 2nd hinge region when it is connected to this 2nd hinge region and said pedestal and said fitting part are folded up.

[Claim 4]A mounting base of the Personal Digital Assistant according to claim 3 which has a notch section for said fitting part to pass said 2nd member when said 2nd member is folded up.
[Claim 5]A mounting base of the Personal Digital Assistant according to claim 4 formed so that a button for an input of said Personal Digital Assistant may expose said notch section outside in the state where said Personal Digital Assistant is attached.
[Claim 6]A mounting base of a Personal Digital Assistant of five given in any 1 paragraph from claim 3 used as a protect member which protects said connection connector when said 2nd member is stored by said fitting part.
[Claim 7]A mounting base of a Personal Digital Assistant of six given in any 1 paragraph from claim 3 which said 2nd member equips with a connection connector with an external information processor.
[Claim 8]A mounting base of the Personal Digital Assistant according to claim 7 used as a protect member which protects a connection connector with an information processor of said exterior when said fitting part stores said 2nd member.
[Claim 9]A mounting base of a Personal Digital Assistant of eight given in any 1 paragraph from claim 3 which said 2nd member equips with a connection connector for current supply to said Personal Digital Assistant.

[Claim 10]A mounting base of the Personal Digital Assistant according to claim 9 used as a protect member which protects a connection connector for current supply to said Personal Digital Assistant when said fitting part stores said 2nd member.
[Claim 11]A mounting base of a Personal Digital Assistant of ten given in any 1 paragraph from claim 3 which said 2nd member is in a state which attached said Personal Digital Assistant to said fitting part, and folded up said pedestal via said 1st hinge region, and supports the back of said Personal Digital Assistant.
[Claim 12]A mounting base of a Personal Digital Assistant of 11 given in any 1 paragraph from claim 1 in which said hinge region can store a power supply which supplies electric power via said connection connector.
[Claim 13]A mounting base of the Personal Digital Assistant according to claim 12 with which a backup power supply of a battery built in said Personal Digital Assistant can store said hinge region.
[Claim 14]A mounting base of the Personal Digital Assistant according to claim 12 or 13 which can store a power supply for said hinge region to charge a battery built in said Personal Digital Assistant.
[Claim 15]A mounting base of a Personal Digital Assistant of 14 given in any 1 paragraph from claim 12 in which said hinge region can store a commercial cell.
[Claim 16]A mounting base of a Personal Digital Assistant given in claim 15 paragraph in which said hinge region can store an exclusive battery charger of the same shape as a cell of said marketing.
[Claim 17]In order to perform supply of electric power to a laid Personal Digital Assistant, or input and output of a signal, A mounting base of a Personal Digital Assistant having a protect member which protects said connection connector in a mounting base of a Personal Digital Assistant provided with a connection connector for electrically connecting with said Personal Digital Assistant when said Personal Digital Assistant is not laid.
[Claim 18]A mounting base of a Personal Digital Assistant having a protect member which protects said connection connector in a mounting base of a Personal Digital Assistant provided with a connection connector with an external information processor when said Personal Digital Assistant is not laid in order to output and input a signal to a laid Personal Digital Assistant.
[Claim 19]In a mounting base of a Personal Digital Assistant provided with a connection connector for current supply to said Personal Digital Assistant in order to supply electric power to a laid Personal Digital Assistant, A mounting base of a Personal Digital Assistant having a protect member which protects said connection connector when said Personal Digital Assistant is not laid.
[Claim 20]In a mounting base of a Personal Digital Assistant provided with a connection connector for electrically connecting with said Personal Digital Assistant, in order to supply electric power to a laid Personal Digital Assistant, A mounting base of a Personal Digital Assistant storing a power supply which supplies electric power to said Personal Digital Assistant via said connection connector.
[Claim 21]A mounting base of the Personal Digital Assistant according to claim 20 which can store a backup power supply of a battery built in said Personal Digital Assistant.

[Claim 22]A mounting base of the Personal Digital Assistant according to claim 20 or 21 which can store a power supply for said hinge region to charge a battery built in said Personal Digital Assistant.
[Claim 23]A mounting base of a Personal Digital Assistant of 22 given in any 1 paragraph from claim 20 in which said hinge region can store a commercial cell.
[Claim 24]A mounting base of a Personal Digital Assistant given in claim 23 paragraph in which said hinge region can store an exclusive battery charger of the same shape as a cell of said marketing.




PDA 3
9
ヒンジ部
取付部
2
4
ヒンジ部
11 同期ボタン
(a)
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外部接続部
8
外部接続部
8
9 ヒンジ部
ヒンジ部 9
7 郷材
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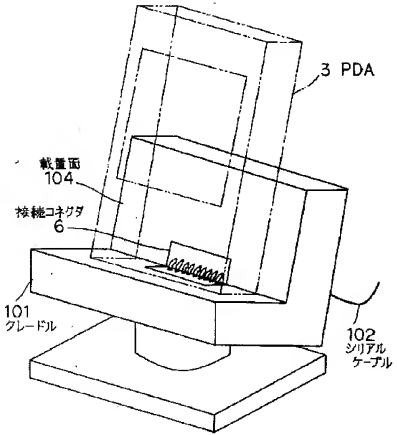
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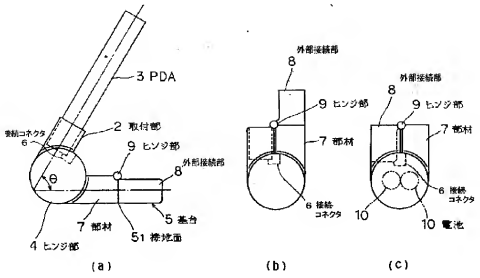
シリアル
ケーブル


3 PDA
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9 ヒンジ部
8 外部接続部
θ
5 基台
7 部材
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(a)
外部接続部
8
9 ヒンジ部
7 部材
6 接続コネクタ
(b)
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7 部材
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